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1. Introduction

In this study we propose to use magnetoencephalography (MEG) to detect and characterize focal abnormalities in neurophysiological function in patients with mTBI and PTSD for the purpose of distinguishing between the two. MEG is a completely non-invasive imaging modality which is able to provide information regarding focal abnormalities in the brain. MEG has been shown to be sensitive to cognitive complaints in patients with mTBI. In addition neurophysiological abnormalities differentiate patients with mTBI and PTSD in some studies. We also propose to explore the relationship between diffusion tensor imaging (DTI) and MEG findings. While MEG provides data regarding focal abnormalities in neural response in the cortex, DTI reveals the status of white matter tracts that form the intracortical connections. Thus, MEG, in combination with DTI, may lead to identification of more distinct, replicable patterns of brain abnormalities in subjects with PTSD and mTBI that may lead to better differentiation between these groups of patients, as well as from patients with a combination of both disorders.

2. Body

We have met with the various collaborators on the project to finalize the protocols for the collection of MEG, structural MRI, DTI and MRS data as well as behavioral data at the various time points for the purpose of accomplishing Specific Aims 2.2.1 – 2.2.3

3. Key Research Accomplishments

- Participated in collaborative activities with the other investigators on this and the other clinical projects to develop the Integrated Clinical Protocol.
- Participated in regular meetings of the Clinical Working Group.
- Contributed to the design/development of case report forms and automated data entry procedures that are now in place.

4. Reportable Outcomes

We have obtained IRB approvals at both the University of Texas and Baylor College of Medicine as of May 4 as well HRPO approval as of July 15. HRPO has required some changes/modifications and those are now ready to submit as protocol amendments both UT and Baylor.

5. Conclusion

The first year of work on this project has involved substantial collaborative effort to compile research activities from all the clinical investigators into a unified protocol and to obtain the required institutional approvals. In addition, the majority of work to define and prepare for subject recruitment, scheduling, and follow-up has been accomplished, and the implementation of a comprehensive data management plan that supports this project and all the clinical investigators is being implemented.

6. References

7. Appendices

List of Individuals Receiving Pay from the Research Effort

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